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CLAIMS

1. A method for detecting surface defects on a metal product as it is being continuously cast, using an eddy  
5 current sensor of the "separate transmitter/receiver" type having rows of contiguous aligned measurement cells that are separately controllable by multiplexing, the product to be inspected undergoing a traveling movement relative to the sensor, characterized in that,  
10 said sensor comprising a matrix of measurement cells distributed in rows and columns, and said matrix having at least first and second parallel rows (22, 24) of at least three measurement cells each (C1 to C12), the multiplexing is activated in successive control steps  
15 in such a way that:

- in a given control step (60, 62, 64, 66), first and second cells in each row are activated, these cells being separated from each other by at least one inactive measurement cell, the first cell being  
20 activated so as to generate eddy currents on the surface of said metal product and the second being activated so that it detects the eddy currents generated by the first cell, the flow of which currents on the surface has been modified by the presence of  
25 surface defects, and, at predetermined time intervals, the two activated cells are inactivated and said control step is repeated with two following cells, which are offset by at least one cell along the same row relative to the two inactivated cells, and so on,  
30 until the surface region to be inspected has been checked; and

- in that said control step (60, 62, 64, 66) is carried out simultaneously for the first (22) and second (24) rows of cells, said first cells of each row  
35 belonging to just one column and said second cells of each row also belonging to just another column, said second cells of each row being configured so as to

produce signals of opposite polarity when a defect is detected.

2. A system for detecting surface defects on a metal  
5 product as it is being continuously cast, comprising a  
sensor (10) for detecting surface defects by eddy  
currents, of the "separate transmitter/receiver" type  
comprising a matrix of measurement cells distributed in  
rows and columns, said matrix having at least first and  
10 second parallel rows (22, 24) of at least three  
measurement cells each (C1 to C12) that are contiguous  
and controllable, and a unit (12) for controlling the  
sensor, by multiplexing, suitable for controlling said  
measurement cells, each measurement cell being capable  
15 of generating eddy currents on the surface of said  
metal product to be inspected and, alternately, of  
detecting eddy currents on said surface, said system  
being characterized in that the control unit (12) with  
multiplexer is capable of controlling:

20 - first and second cells in each row, which are  
separated from each other by at least one inactive  
measurement cell, the first cell being activated so as  
to generate eddy currents on the surface of said metal  
product and the second being activated so as to detect  
25 the eddy currents generated by the first cell, the flow  
of which currents on the surface has been modified by  
the presence of surface defects; and

- the cells of the second row in the same way as  
the cells of the first row.

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3. The system as claimed in claim 2, characterized in  
that the sensor (10) includes a base (20) in which at  
least three aligned rows are housed and in that the  
base (20) is placed at a distance of at least three  
35 millimeters from the surface on which the surface  
defects have to be detected.

4. The system as claimed in claim 3, characterized in that it includes a device (30) for cooling the base (20).

5 5. The system as claimed in claim 4, characterized in that the cooling device (30) includes a circuit for circulating a coolant along the base (20).

10 6. The system as claimed in claim 5, characterized in that the cooling device (30) includes at least one ceramic plate (40) placed facing the base (20) so as to leave a space for the coolant circulation circuit.

15 7. The system as claimed in claim 2, characterized in that each cell of the first row (22) is contiguous with a cell of the second row (24) and can be configured so as to deliver a signal of opposite polarity to that delivered by the contiguous cell of the second row, and in that the control unit (12) is suitable for  
20 configuring the second cells of the first and second rows so that they deliver signals of opposite polarity.